

FuelsManager[®] - Inventory Management Software

Supervisory Control and Data Acquisition (SCADA) suite for the Oil & Gas industry



Applications

FuelsManager (SCADA) software is specifically designed for operators of bulk storage facilities, marketing terminals, refineries and pipelines. It integrates all major types of tank level and mass measurement instruments into one system.

All measured and calculated tank parameters are accessible to your tank farm and terminal operators. Displays are fully configurable to meet your specific requirements. Each screen provides a graphical representation of your tank or tank farm that is easy to interpret and intuitive to use.

The SCADA functionality allows seamless integration of pumps, valves and PLCs with a minimum of hardware.

Extensive network capabilities offer the opportunity to have real-time data at any connected location for administrative and accounting purposes.

Features

- SCADA functionality: Supervisory control coupled with data acquisition for any tank gauging application
- Full API/ASTM compliant calculations assure accurate and real-time inventory data of your liquid hydrocarbon stock
- Windows based graphical user interface (GUI) gives world-wide acceptance and ease of use
- Standard "tank" object for ease of configuration with standard templates for various tank types
- Comprehensive alarm/event/reporting capabilities - daily alarm/event file logged to printer and hard disk
- Network capability (peer-to-peer, client/server) - system can expand with customer requirements
- Client/Server design - industry standard design for SCADA/DCS applications



Operator Interface

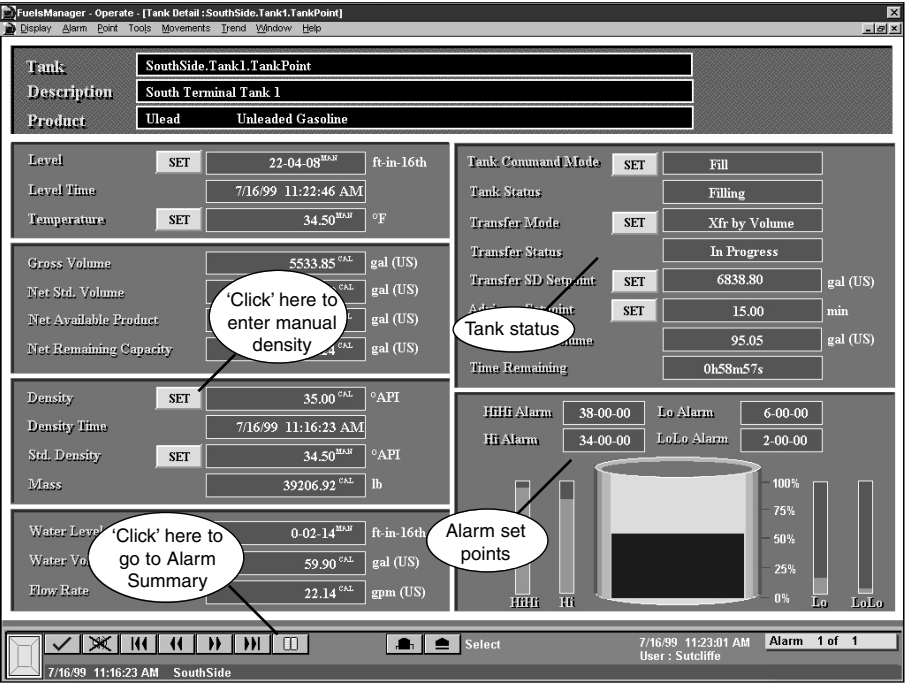
Displays

FuelsManager provides real-time operational information on the status of your tank farm using both standard predefined and custom displays.

Tank Detail

FuelsManager includes several tank display templates. Each template shows tank data both graphically and alphanumerically. Data shown includes volumes, flows, density, alarms and product movement information. Custom templates can be created via FuelsManager's Draw utility, to display tank data in the required customer configuration.

Example of a Tank Detail screen

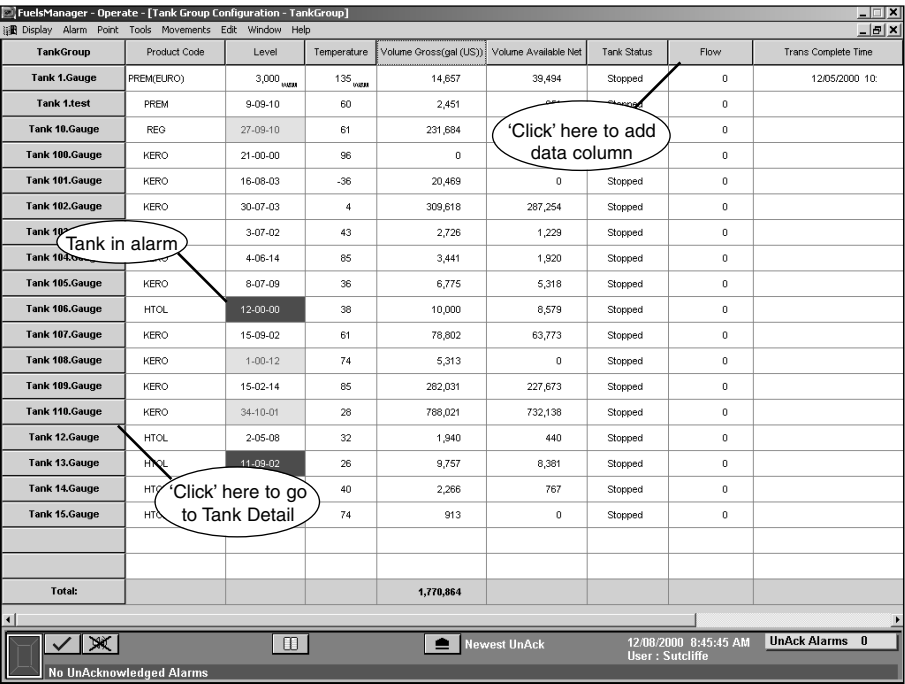


Tank Groups

Tank groups can be created that display tabular tank data with up to 20 tanks per page. Operators or system administrators can create and modify tank groups in real-time and users may select or modify which tanks or tank data is displayed. Any number of tank groups can be saved within FuelsManager.

Alarm status is indicated on the tank group display. Individual tank details can be displayed by a single click of the mouse.

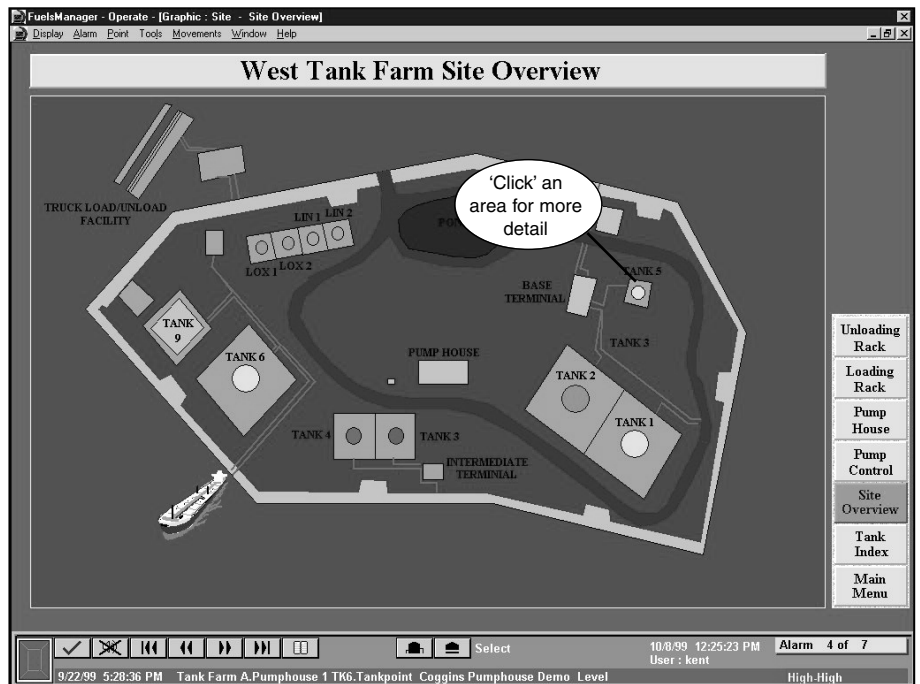
Example of a Tank Group screen



Site overview

Custom site displays or site overviews can easily be created using tank icons or a digital image within FuelsManager's Draw utility. Site overview screens provide an entry to the entire site, allowing the user to access the tank detail screen by clicking on a particular tank.

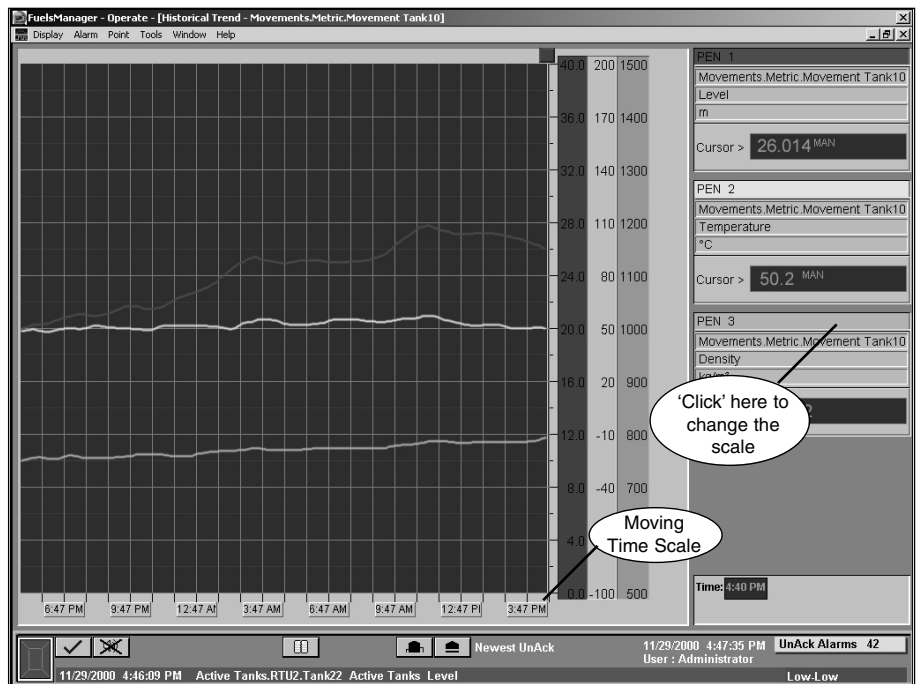
Example of a Site Overview screen - Your site with your tanks



Trending

Both real-time and historical trending are available as a standard feature within FuelsManager. Up to 4 pens of data can be displayed per trend window. The data, process range, color and time scale can be selected per trend. Multiple trend windows can be opened simultaneously.

Example of a Trend screen



Alarming

Alarm status is displayed both graphically and alphanumerically as alarm conditions occur. A fixed alarm line at the bottom of every display and a full window alarm summary show current alarm status. This includes the alarm, date and time, acknowledgement status and alarm priority. Alarms can be viewed as several operator selectable orders.

Example of a alarm condition, with Tank Detail and Alarm Summary windows showing

The screenshot displays the FuelsManager - Operate interface. The Tank Detail window shows information for TOLEDO.Tank_219.TankPoint, including Level (39.11-00), Level Time (12/11/2000 2:30:02 PM), Temperature (114.5), Gross Volume (1145969.33), Net S/L Volume (1102571.47), Net Available Product (974395.70), and Net Remaining Capacity (0.00). The Alarm Summary window shows a list of alarms, including High-High, High, Low-Low, and Low, with their respective dates and times. A callout points to the Alarm Summary window, stating "Summary of all alarms sorted by time". Another callout points to the Alarm Summary window, stating "Flashing color indicating level status".

Reports

FuelsManager can display both real-time and historical report data. Standard or user configured reports can be previewed by the user, then printed either on demand or periodically. Historical reports are created using Seagate Software Crystal Reports™. The user may use the predefined historical reports or create custom reports using Crystal Reports™.

Report screen produced using Seagate Software Crystal Reports™

The screenshot displays the FuelsManager - Operate interface showing the Current Tank Inventory Report as of 12/11/2000 03:00:00PM. The report is summarized by product and lists various tanks and their volumes. Callouts highlight specific features: "Tanks sorted by product" points to the Product column, "Easily add your own logo here" points to the report header area, and "Total volume by product" points to the Total column. The report includes columns for Tank Description, Product, Gross Vol [USgal], and Avail [USgal].

Calculator

The tank calculator allows users to schedule and plan, based on “what if” scenarios. The operator can manually perform calculations, using current tank data, without changing any tank values, for example "what the level would be if he added 10,000 gallons" or " what volume would be at the high level limit".

Calculator => \\TESTWS6\TOLEDO.Tank_209.TankPoint

Data Item	Start Values	End Values	Differential Values
Level (ft-in-16th)	15-02-12	10-10-04	-4-04-08
Water Level (ft-in-16th)	0-01-00	0-01-00	0-00-00
Solids Level (ft-in-16th)	0-00-00	0-00-00	0-00-00
Temperature (°F)	36.0	37.0	1.0
Temp Tank Ambient (°F)	59.1	61.1	
Vapor Temp. (°F)	45.3	48.5	
Vapor Press (PSI)	0.00	0.00	
%BSW	0	0	
Standard Density (°API)	31.90		
Density (°API)	30.15		0.28
Tank Shell Corr Fac	0.99974		0.00001
VCF	1.01080		-0.00040
Volume (gal (US))	897312.75	640432.26	-256880.49
Roof Correction (gal (US))	1237.32	1239.44	2.13
Volume Gross (gal (US))	887630.25	630822.87	-256807.39
Vol. Available Gross (gal (US))	629748.96	372940.24	-256808.72
Vol. Remaining Gross (gal (US))	1160701.38	1417533.98	256832.60
Volume Net (gal (US))	897216.66	637383.42	-259833.24
Volume Available Net (gal (US))	636550.25	376818.82	-259731.43
Volume Remaining Net (gal (US))	1173236.95	1432276.34	259039.38
Tank Bottom Volume (gal (US))	8214.00	8214.00	0.00
Water Volume (gal (US))	8214.00	8214.00	0.00
Solids Volume (gal (US))	0.00	0.00	0.00
Mass (lb)	6477554.32	4596340.35	-1881213.96
Mass Available (lb)	4546540.95	2689369.62	-1857171.33
Mass Remaining (lb)	8379810.64	10222211.38	1842400.75
Volume Correction (gal (US))	0.00	0.00	0.00
Gas Density (°API)	0.00	0.00	0.00

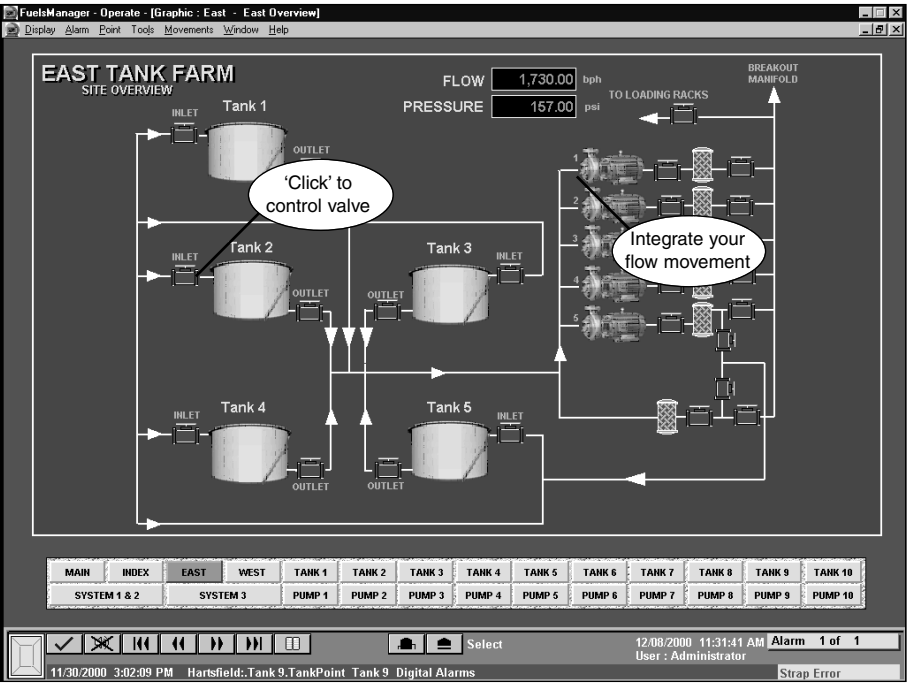
OK Print

Annotations:
- 'Click' to calculate data at entered level (points to the Level field)
- Real-time data displayed when calculator opened (points to the Volume field)

Calculator Dialog box

Supervisory Control and Data Acquisition

FuelsManager can provide SCADA functionality for equipment, such as pumps and valves, and also show pipe work. Displays typically show status and control of pumps and valves and indication of flow rates and pressure in pipes.

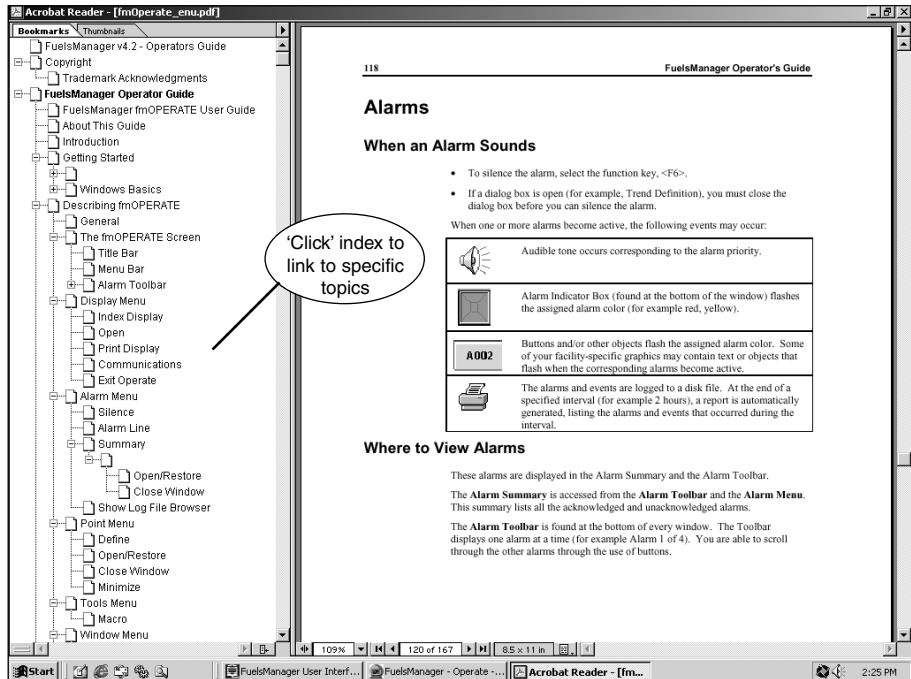


Example of a SCADA display

Help

FuelsManager includes on-line help for all functions and product features. The on-line documentation is in PDF format and can be viewed and printed while executing FuelsManager.

Example of a online help files with bookmarked links for ease of use



Configuration

Tank Object

The tank object is a central database point designed for configuration of all information associated with a tank. Process data, engineering units, strap tables, volume correction tables, alarms and tank geometry are all configured within the tank object.

Over 40 tank variables are automatically created for a tank and can be used to:

- connect to a field value
- calculate data from other values
- enter data manually

Variables defined in one set of engineering units may be displayed in alternate units in graphics, tank details and reports.

Edit Tank Data

General | Volume | Process Data | Alarms | Vessel | Strapping Table

Correction Method: [Product] U1285

Correction Type: Polynomial

Std. Temp: 60.000 °F

K Factors: K0: 1, K1: -0.00033, K2: 0, K3: 0, K4: 0

Averaging Filter: Samples: 4, Sample Time: 60 Sec

Flow: Filter [checked], Deadband: 5.000

Level Rate: Filter [unchecked], Deadband: 0.004

Mass Flow: Filter [unchecked], Deadband: 0.000

Net Flow: Filter [unchecked], Deadband: 0.000

Special Rounding: VCF: None, Level: None, Temperature: None

Volume Calculations: Water: Not Subtracted, VSW: Not Subtracted, Net Mass: Mass, Mole Constant: 0

OK Cancel Apply

Tank Object configuration dialog box

Tank Geometry

Supported calculations include cone roof tanks, horizontal cylinders (with flat ends), bullets and spheres (both standard and polynomial). Tanks can either be configured with fixed roof or floating roof and calculations can include or exclude the floating roof mass in the strapping tables.

Minimum and maximum working levels can be set and are used to calculate available product and remaining tank capacity. Tank capacity tables (Strapping tables) may be innage or outage(ullage) with unlimited strap entries per tank.

Edit Tank Data

General | Volume | Process Data | Alarms | Vessel | Strapping Table

Characteristics: Landed Height: 0.000 ft, Floating Height: 0.000 ft, Roof Mass: 0.000 Mlbs, Roof Type: No Tank Roof, Tank Geometry: Vert. Cylinder

Transfer Limits: High: 26.900 ft, Minimum Empty: 1.000 ft, User Defined [unchecked], Low [unchecked], Low-Low [checked]

Gauge: Gauge Type: TI Model 150, Modifier: Undefined

Tank Shell Correction: Enable Correction [unchecked], Shell Insulation [unchecked], Tank Material: Unknown, ExpCoef: 0, AreaCoef: 0

Vapor Character: Tank Volume: 0.000 gal (US), Tank Height: 0.000 ft, Tank Radius: 0.000 ft, Shell Thickness: 0.000 ft, Float Mass: 0.000 Mlbs, Float Density: 0.000 lb/gal (US), Float Diameter: 0.000 ft

OK Cancel Apply

Tank Geometry configuration dialog box

Product Database

Configuration of products can include the assignment of standard density, description, calculation method, temperature alarms and calculation method. Assigning a product to a tank helps prevent unintentional mixing of products and with one operation all properties of a product are assigned to the tank.

Product database configuration dialog box

Product

Name (20 chars)

Unleaded

Description (30 chars)

Unleaded Gasoline

Correction Method

Type

API °F

Specific

Table 6A/5A

Standard Temperature

60

°F

Standard Density

0

°API

Correction Factors

H.A.

H.A.

H.A.

H.A.

H.A.

Temperature Alarms

0

High-High

0

High

0

Low

0

Low-Low

0

Hold Off

Use Temperature Limits

OK

Cancel

Extensive API and ASTM support

Alarms

Level, temperature, density, flow, level rate, pressure, movement, reverse flow, no flow and an estimated time of arrival (ETA) are predefined for all tanks. User security configuration makes it easy to restrict access to changing alarms.

Alarm configuration dialog box

General

Volume

Process Data

Alarms

Vessel

Strapping Table

Gauge Alarm

T1150

Alarm	State	High-High	High	Low	Low-Low	HoldOff
Level	Enabled	26.9	26	1	1	0.5
Temperature	Enabled	175	150	20	-5	-6
Density	None					
Flow	Enabled		3500	0		100
Level Rate	None					
Pressure	None					
Movement	Enabled		0.05			0
Reverse Flow	Disabled					0
No Flow	Disabled					0
Test Mode	Disabled					
ETA	Enabled					

Alarm Groups

OK

Cancel

Apply

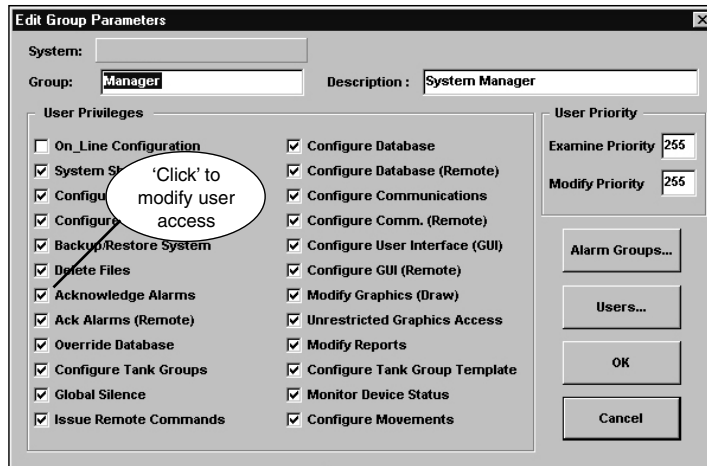
Easy alarm configuration

Security

FuelsManager user accounts make use of Windows NTFS file and object based security. 32 unique characteristics can be specified per user account that provide various levels of operation and controlled access for:

- Display and creation of real time graphics
- Modification of data base
- Operator commands
- Alarm acknowledgement
- Report creation

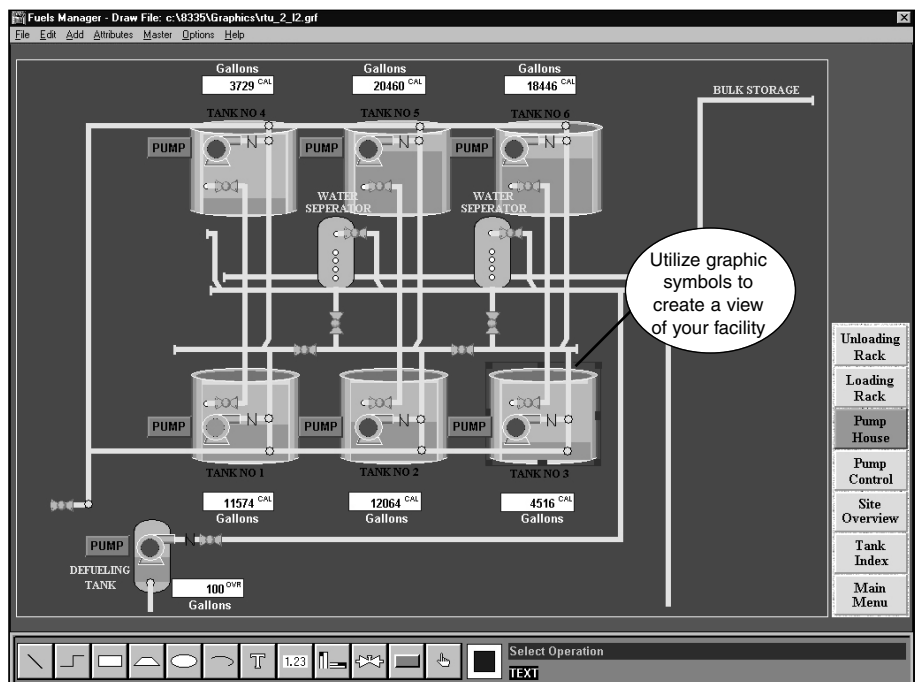
Security parameters dialog box



Draw

FuelsManager's Draw utility is used to create or modify custom displays and tank detail screens. The Draw utility contains a graphical symbol library that can be used in creating custom displays. Custom displays can be created or modified without the need to exit the operator interface program, shut down or restart the system.

Example of a custom display screen



FuelsManager Editions

The FuelsManager software suite is available as a licensed product with various levels of functionality. Each edition is available pre-installed on a PC or as a software license only.

Deliverables

The FuelsManager license (without PC) includes the following components:

- User and operator manual
- CD with files necessary to install the FuelsManager and ViewRTU software
- Software protection key

The FuelsManager license preinstalled onto a PC includes the following deliverables:

- PC with minimum required features for workstation or server editions
- User and operator manual
- CD with files necessary to install the FuelsManager and ViewRTU software
- Software protection key
- Windows NT/2000 license

FuelsManager Server

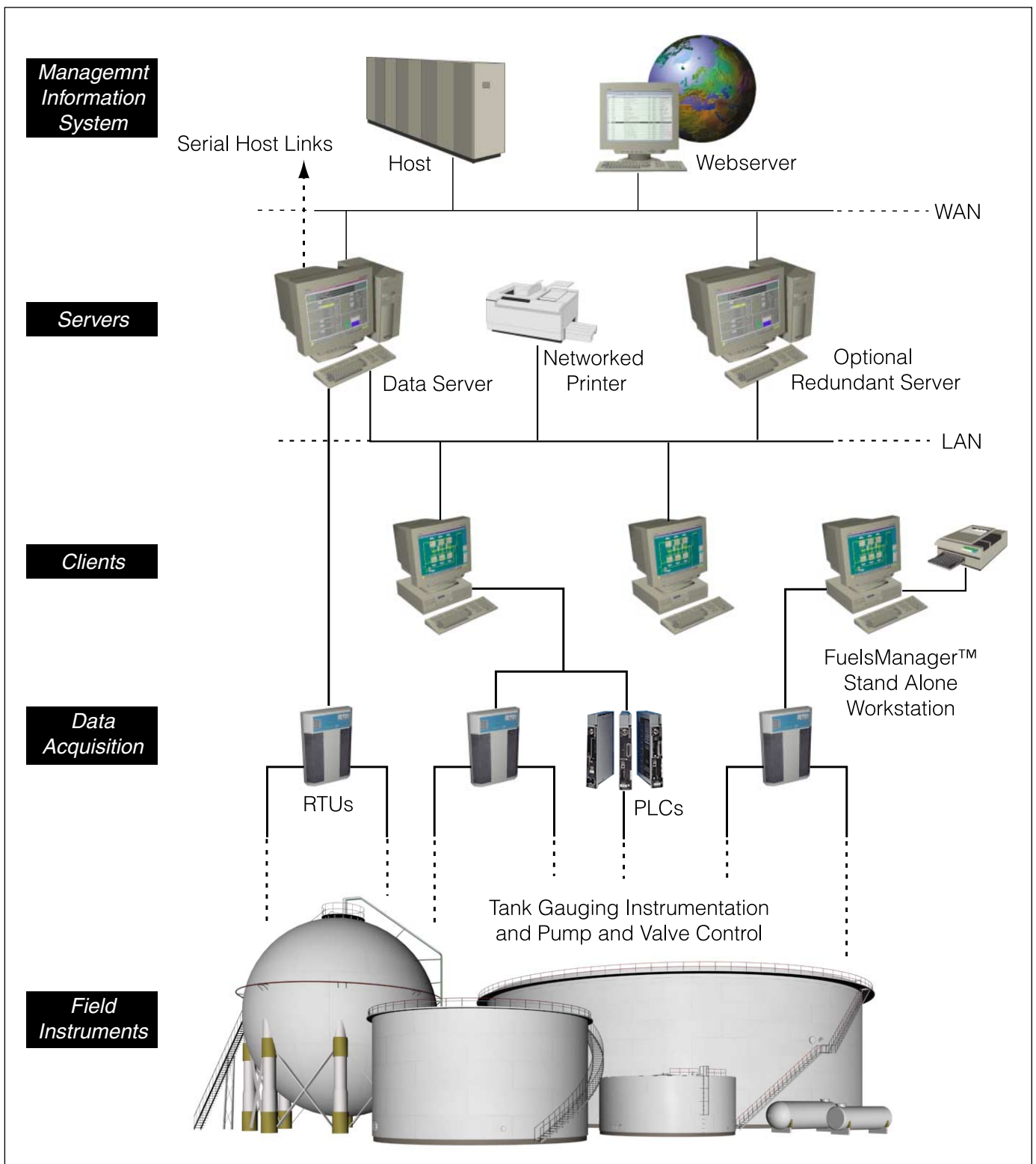
FuelsManager Server is the highest level of licensing and is intended for large installations where the customer wishes to purchase a single site license and then use multiple FuelsManager clients to access the data from a central data server. No additional licenses are required to connect FuelsManager workstations. PC platforms will be selected to best fit your site application and location.

FuelsManager Professional

FuelsManager Professional is intended for small to medium sized networks where the customer needs to be able to customize the operator interface and show data over a network. Each FuelsManager workstation on the network has its own licensing key. The FuelsManager Professional Edition can also act as a data server and provide inventory data to other FuelsManager Professional or Standard Editions.

FuelsManager Standard

FuelsManager Standard is intended for standalone systems for up to 30 tanks or as a client to a Professional or Server Edition. FuelsManager Standard Edition supports predefined graphics and reports, but does not allow these standards to be modified; custom graphics or reports cannot be created. FuelsManager Standard Edition cannot serve data to other FuelsManager stations and/or be used with the optional Product Movement Package. FuelsManager Standard and does not support SCADA functionality.



Example of FuelsManager system diagram

System Overview

The FuelsManager system consists of integrated client/server architecture of programs/modules that interact using the Windows NT operating system. FuelsManager operates on a single PC or as part of an unlimited network of workstations and server configurations.

FuelsManager runs as a Windows NT/2000 service, making critical data always available.

Communications Manager

Communications Manager handles all communications with field or host devices via a wide selection of communications device drivers. Complete configuration and diagnostic capabilities are available within Communications Manager.

Data Manager

Data Manager is the central repository for all real-time data. It performs all volume calculations and alarm/event processing.

Report Manager

Report Manager schedules automatic printing of FuelsManager standard and custom real-time reports.

Archive Manager

Archive Manager takes periodic snapshots of real time data and writes it to an ODBC compliant database.

Connectivity

Tank Gauge

FuelsManager integrates all major types of tank level and mass measurement instruments into one system including:

- Float
- Radar
- Servo
- Hydrostatic
- Magnetostrictive
- Hybrid

FuelsManager measured and calculated tank parameter data includes:

- Level
- Temperature
- Gross and net standard volumes
- Density, standard and observed
- Water level
- Flow
- Mass

Most device connections to the system are configured through the process data dialog box

Variable	Source
Level	CM - Logistics 8130 RTU/RTU #1/T1150.16.Level
Temperature	CM - Logistics 8130 RTU/RTU #1/T1150.16.Temp
Density	Calculated
Water Level	Manual Entry
%BSW	Manual Entry
Volume Gross	Calculated
Volume Net	Calculated
Volume Remaining Net	Calculated
Volume Available Net	Calculated
Standard Density	Manual Entry
Mass	Calculated
Solids Level	Manual Entry
Flow	Calculated
Water Volume	Calculated
Gauge Position	Not Assigned
Density Temperature	Calculated
Solids Volume	Calculated
Transfer Mode	Manual Entry

Modify Priority: 200

OK Cancel Apply

RTU

FuelsManager includes a highly optimized interface for connectivity to the Endress+Hauser RTU 8130. The RTU provides intelligent interface modules for connectivity to tank gauge field communications. In addition, digital, analog and pulse I/O capabilities exist within the RTU. The interface between the RTU and FuelsManager™ can utilize 2 communication ports on the RTU for redundant communications. The interface will also allow FuelsManager and ViewRTU, configuration and diagnostics software, to execute on the same communications link simultaneously.

PLC

FuelsManager supports interfaces to most major PLC manufacturers. This is achieved through specific device drivers or MODBUS® communications. Communications to PLCs provides pump and valve control and large quantities of I/O.

Host

FuelsManager supports host communications to DCS or MIS computer systems through specific device drivers or MODBUS® communications. Communications can utilize either standard RS-232, LAN or WAN connections.

OPC

FuelsManager includes an OPC client interface (OPC specification V2.0). The application of the OPC standard interface provides interoperability between automation/control applications, field systems/devices and business/office applications.

ODBC

FuelsManager's real-time data is written to an ODBC compliant database on a user defined periodic basis. This data is then available to other applications locally or via a network.

Additional Options

Application Extensions

Open architecture supports optional application modules to be added for specific requirements. Additional modules are available to cover specific applications not included in the Standard, Professional or Server Editions of FuelsManager.

FuelsManager Environmental

FuelsManager Environmental performs static analysis of the FuelsManager's archive database, providing leak analysis reports. It is capable of detecting leaks as small as 2 gpm.

Movement System

The movement system is able to track movements of product within the system and manage tank-to-tank transfers, charges, yields (rundowns), shipments, receipts, water drains and blends. Real-time operational alarms when setpoints are reached are also presented to the operator. All Movement System data is written to an ODBC compliant database.

Alarm Pager

The Alarm Pager module provides operators with a remote alarm paging facility. If a tank is in an alarm situation, Fuelsmanager will use network or cellular communications to page your operator with specific details of the alarm status, allowing them to respond quickly and efficiently to the situation.

FM Log

FuelsManager's FM Log application extension periodically writes the contents of selected tank point variables to a file, providing data to other applications. File options include CSV (comma separated variable) and HTML files. The user may select the time interval for update of data.

Custom Extensions

Custom application extensions can be developed without modifying the standard FuelsManager product. This can be done at any Endress+Hauser Systems & Gauging office. In addition, third party developers can utilize a FuelsManager Application Program Interface (API) to create custom application extensions.

Technical Data

Graphic Displays

- Multiple windows available for simultaneous real-time display
- Change of color and visibility based on field changes
- True Type scalable font capability
- Screen dump to color printer

User Configuration

- Ability to add data base points during graphics creation
- Graphics creation using symbol library
- Animated graphic and text colors based on system or field values
- Four alarm priorities supported, each with its own color and audible attributes
- 16 alarm groups supported
- Animation based on eight different alarm conditions
- User notified of alarms regardless of which display is active

Parameters

- Alarms
- Level
- Temperature
- Density
- Flow
- Level rate of change
- Pressure
- Movement
- Reverse flow
- No flow
- Estimated time of arrival (setpoint ETA)

Alarm Summary

- User sizable alarm summary window
- Alarm summary pages supported
- Alarms logged to file for future reference
- Alarms keyed to user graphic

Events

- User selectable printout of each event change
- User selectable log to file of each event change

Real-Time and Historical Trending

- Support of up to four pens per trend display, user configurable scaling, colors and width
- Historical reports
- Trend continues to update when not displayed

Reporting

- Predefined real-time & historical reports
- Standard or user configured reports
- Reports may be scheduled periodically or on demand
- Supports Seagate Software Crystal Reports®

Networking

- Support Peer-To-Peer and Client Server Local Area Networks (LAN) and Wide Area Networks (WAN)

Redundancy

- FuelsManager can be installed on redundant servers for support of automatic and manual switchover

Connectivity

Slave modules

- MODBUS® Slave module
- MTU77 Slave module
- OSI Software, Plant Information (PI)
- PROSS II Slave module

Master modules

- Master module-8130/RTU
- MODBUS® master
- MODBUS® master for Varec devices
- Whessoe Bus
- Varec TSU
- Dumb terminal
- Veeder Root TLS 35x

Units of Measure

Engineering units for tank variables, input and output (in metric and US units), can be selected for various measuring applications

- Density - 20 to choose from including: degrees API, kilogram/cubic meter, kilogram/liter, pounds/gallon or grams/cubic centimeter
- Flow - both volumetric and mass flow units can be supported in variations of units per second, minute, hour or day
- Length: millimeter, meter, feet, inch, feet-inch-16th, feet-inch-8th
- Mass: from kilogram, metric tonnes, pounds and English, short and long ton
- Pressure - over 15 units including: Pascals, pounds/square inch, kilograms/square centimeter, feet or inch water (H₂O), Bar and millibar
- Temperature: degrees Centigrade, degrees Fahrenheit
- Volumes - cubic centimeters, cubic inch and cubic feet, oil barrels, liquid barrels, US gallons, imperial gallons, liter and kiloliter

Volume calculations

FuelsManager can calculate the following data:

- Reference density
- Total observed volume
- Gross observed volume
- Floating roof adjustment
- Net standard volume
- Mass
- Available volume / available mass
- Remaining volume / remaining mass
- Water volume
- Flow

Fuelsmanager compensates for variations in temperature using:

- Volume correction factor (VCF)
- Compensation for Tank Shell temperature (CTSh)

CTSh

- Volume correction based on temperature of tank shell
- Single temperature sensor can be assigned to all tanks

Volume Correction Methods

API/ASTM D 1280 (1989) and (1980)

- Tables 5/6 (A, B, C & D)
- Tables 53/54 (A, B, C & D @ 15 and 30 °C)
- Tables 60 (A, B & D) @ 20 °C

GPA TP25

- Table 23/24E

JIS 2249 (1980)

- Table 53/54 (A, B, C & D @ 15 and 30 °C)
- Table 60 (A, B & C @ 20 °C)

JIS 2250 (1967)

- Table 2 (54)

ASTM 1250

- Table 55
- Table 54A (6X)
- Table 54B (6X)

ASTM D1555 (°C and °F)

Special rounding factors can be applied to certain calculations for VCF, level and volume including:

- Water volume subtracted from gross or net volume or based on selected standards
- Bottom S&W subtracted or included from strap volume
- Mass calculations optionally may include vapor mass

FuelsManager accommodates a fourth order polynomial for chemicals and specialized products to obtain a Volume Correction factor (VCF).

Languages Supported

FuelsManager is available in English and Japanese. Operator versions are available in French, German, Spanish and simplified Chinese. Custom graphics, tank details and reports can also be configured in other languages. Languages other than English may require local specific versions of Windows NT/2000.

Product Structure

FuelsManager Data Acquisition

- E Standard Edition
- L Standard Edition license only - no PC
- P Professional Edition license only - no PC
- S Professional Edition license with a PC Server
- W Professional Edition license with a PC Workstation
- F Server site license Edition



N9000 product designation

FuelsManager Application Extensions

- Application Extension
- F FM Log application
 - L LeakManager application
 - M Movement System



N9001 product designation

FuelsManager Communication Modules

- Slave Module
- S1 MODBUS® Slave module
 - S2 MTU77 Slave module
 - S3 OSI Software, Plant Information (PI)
 - S4 PROSS II Slave module Master module
 - M1 Master module-8130/RTU
 - M2 MODBUS® Master (Varec Devices)
 - M3 MODBUS® Master (Generic, Sakura)
 - M4 Whessoe Bus Master
 - M5 Varec TSU Master
 - M6 Dumb Terminal Master
 - M7 Veeder Root Master PLC module
 - P2 Allen Bradley PLC (Via RSLinx-RS232)
 - P3 Allen Bradley PLC (RSLinx-KT Card-DH+)
 - P4 AEG PLC



N9002 product designation

* Contact the factory for information on Environmental or Aviation Editions.

FuelsManager® is a registered trademark of
Endress+Hauser Systems & Gauging, Inc.

Supplementary Documentation

- ☐ FuelsManager Data Acquisition System Information Si 006G/03/en
- ☐ RTU 8130 Remote Terminal Unit System Information Si 007G/03/en
- ☐ RTU 8130 Remote Terminal Unit Technical Information Ti 007G/03/en
- ☐ For documentation covering the various module and communication interface options available, please contact an Endress+Hauser Systems & Gauging Representative.

Locations

Endress+Hauser
Systems & Gauging, Inc.
2901 W. Sam Houston Pkwy. N.
Houston, TX 77043
USA
Tel: +1 (832) 590-6200
Fax: +1 (832) 590-6201

Endress+Hauser
Systems & Gauging, Inc.
1800 Diagonal Road
Alexandria, VA 22314
Suite 300
USA
Tel: +1 (703) 837-9202
Fax: +1 (703) 837-9209

Endress + Hauser
Systems and Gauging, Inc.
500 West Central Avenue
Suite A
Brea, CA 92821
Tel: +1 (714) 529-1925
Fax: +1 (714) 529-2949

Sakura Endress Co., Ltd.
862-1 Mitsukunugi
Sakaigawa-mura
Higashi-Yatsushiro-Gun
Yamanashi Prefecture
406-0846 Japan
Tel: +81 (0)552-66-4964
Fax: +81 (0)552-66-4969

Systems & Gauging Headquarters

Endress+Hauser
Systems & Gauging, Inc.
5834 Peachtree Corners East
Norcross (Atlanta), GA 30092
USA
Tel: +1 (770) 447-9202
Fax: +1 (770) 662-8939
<http://www.systems.endress.com>

Endress + Hauser
Systems & Gauging

